

Original Translation

- 7 -

PCT/DE00/02395

## Patent Claims

- Sub A
1. An optical coupling device for injecting light between two optical-waveguide end faces, it being possible to vary the geometrical position of the one optical-waveguide end face, for example an optical fiber, with respect to the other optical-waveguide end face, for example a fiber-optic chip, with the aid of a variable-length element which, via a holding device, carries the one of the two optical waveguides, and is fastened to the other optical waveguide through a holding block, characterized in that the variable-length element (8), or the holding device (12), is held by a spring element (14), the spring element (14) is spongily or porously designed and is supported directly or indirectly on at least one of the holding blocks (4, 6) and allows movements of the variable-length element, or the holding device, in the length direction of the variable-length element, in which the variable-length element is extended or shortened, and prevents movement of the variable-length element perpendicular to the length direction of the variable-length element.
2. The device as claimed in claim 1, characterized in that the variable-length element (8), the holding device and the spring element (6) are arranged between the two holding blocks (4, 6), and in that the holding device is designed integrally with the variable-length element and the spring element is designed separately therefrom.
3. The device as claimed in claim 1, characterized in that the variable-length element (8), the holding device and the spring element are arranged between the two holding blocks (4, 6), and in that the holding device, the variable-length element and the spring element are designed integrally.
4. The device as claimed in claim 1, characterized in that the variable-length element (8), the holding device (12) and the spring element (14) are arranged between the two holding blocks (4, 6), and in that the holding device and the spring element are designed

Original Translation - 8 -

PCT/DE00/02395

integrally and the variable-length element is designed separately therefrom.

5. The device as claimed in claim 1, characterized in that the variable-length element (8), the holding device (12) and the spring element (14) are arranged  
5 between the two holding blocks (4, 6), and in that the holding device, the spring element and the holding block (6) connected thereto are designed integrally and the variable-length element is designed separately  
10 therefrom.

6. The device as claimed in one of claims 1 to 5, characterized in that the spring element (14) is formed by slots (16, 18) in the variable-length element (8), or the holding device, which lie in a plane  
15 perpendicular to the length direction of the variable-length element, the open edges lying perpendicular to the chip plane.

7. The device as claimed in claim 6, characterized in that an even number of slots are provided.

20 8. The device as claimed in one of claims 1 to 5, characterized in that the spring element (14) is formed by bores in the variable-length element (8), or the holding device, which lie in a plane parallel to the end faces of the optical waveguides and perpendicular  
25 to the length direction of the variable-length element.

9. The device as claimed in one of the preceding claims, characterized in that the length of the variable-length element is selected in such a way that the spring element is under prestress in the starting  
30 position of the variable-length element.

10. The device as claimed in one of the preceding claims, characterized in that the two holding blocks (4, 6) are connected to one another by a link (20).

11. The device as claimed in claim 1, characterized in that the two holding blocks are connected to one another by a frame, a respective link being provided at the top and at the bottom between the two holding blocks.

12. The device as claimed in one of the preceding

Original Translation / - 9 - PCT/DE00/02395  
claims, characterized in that the holding device is a  
ferrule in which the optical waveguide (10), or the  
optical fiber, is fastened.